

SEQUENCE LISTING

5 <110> Schmülling, Thomas  
Werner, Tomás

<120> Method for modifying plant morphology, biochemistry and  
physiology

10 <130> CROP-005-PCT

<140>  
<141>

15 <150> EP 00870132.8  
<151> 2000-06-16

<150> US 60/258,415  
<151> 2000-12-27

20 <150> EP 01870053.4  
<151> 2001-03-16

<160> 36

25 <170> PatentIn Ver. 2.1

<210> 1  
<211> 2236  
<212> DNA  
30 <213> Arabidopsis thaliana

<400> 1  
atgggattga cctcatcctt acggttccat agacaaaaca acaagacttt cctcggaatc  
60  
35 ttcatgatct tagttctaag ctgtatacca ggtagaacca atctttgttc caatcattct  
120  
gttagtacc caaaagaatt accttcttca aatccttcag atattcggtc ctcattagtt  
180  
tcactagatt tggagggtta tataagcttc gacgatgtcc acaatgtggc caaggacttt  
40 240  
ggcaacagat accagttacc acctttggca attctacatc caaggtcagt ttttgatatt  
300  
tcatcgatga tgaagcatat agtacatctg ggctccacct caaatcttac agtagcagct  
360  
45 agaggccatg gtcactcgct tcaaggacaa gctctagctc atcaagggtg tgatcatcaa  
420  
atggagtcac ttcgaagtcc tgatatcagg atttataagg ggaagcaacc atatgttgat  
480  
gtctcaggtg gtgaaatatg gataaacatt ctacgcgaga ctctaaaata cggctctttca  
50 540  
ccaaagtcct ggacagacta ccttcatttg accgttggag gtacactatc taatgctgga  
600  
atcagcggtc aagcattcaa gcatggaccc caaatcaaca acgtctacca gctagagatt  
660  
55 gttacaggta tttcattcat gctttatctc tgcggtagtc tcaaaaaaat atgcacctgt  
720  
aaagaatatc catctcttca tgagcaaaaa cactgacgac tttaaataat ttttgactat  
780  
aaaacaagag tgcataaggca caaatgtgaa atatgcaaca cacaattgta acttgcacca  
60 840

10014101.131001

agaaaaaagt tataaaaaca aacaactgat aagcaatata tttccaatat ttaatcaggg  
 900  
 aaaggagaag tcgtaacctg ttctgagaag cggaattctg aacttttctt cagtgttctt  
 960  
 5 ggcgggcttg gacagtttgg cataatcacc cgggcacgga tctctcttga accagcaccg  
 1020  
 catatggtaa agttctatct tgaacaaagt tcaaacaata tacgctatga ttctaagaac  
 1080  
 10 cactttcctg acacagtcaa ataactttta atagggttaa tggatcaggg tactctactc  
 1140  
 tgacttttct gcattttcaa gggaccaaga atatctgatt tcgaaggaga aaacttttga  
 1200  
 ttacgttgaa ggatttgtga taatcaatag aacagacctt ctcaataatt ggcgatcgtc  
 1260  
 15 attcagtcct aacgattcca cacaggcaag cagattcaag tcagatggga aaactcttta  
 1320  
 ttgcctagaa gtggtcaa atttcaaccc agaagaagct agctctatgg atcaggtaag  
 1380  
 atgtgaaagc aatatataac tagacttagt ttccacagag agctccaaat caaccgttgg  
 1440  
 20 ctactagcct actaacataa tgaatgggtg ccgtgcagga aactggcaag ttactttcag  
 1500  
 agttaaatta tattccatcc actttgtttt catctgaagt gccatatatc gagtttctgg  
 1560  
 25 atcgcgtgca tatcgcagag agaaaactaa gagcaaaggg tttatgggag gttccacatc  
 1620  
 cctggctgaa tctcctgatt cctaagagca gcatatacca atttgctaca gaagttttca  
 1680  
 acaacattct cacaagcaac aacaacggtc ctatccttat ttatccagtc aatcaatcca  
 1740  
 30 agtaagtgag caaatgcca aaagcaaagc cgtccagtga ttctgaaaca taaattacta  
 1800  
 accatatcca acattttgtg gtttcagggtg gaagaaacat acatctttga taactccaaa  
 1860  
 35 tgaagatata ttctatctcg tagcctttct cccctctgca gtgccaaatt cctcagggaa  
 1920  
 aaacgatcta gactaccttt tgaacaaaa ccaagaggtt atgaacttct gcgcagcagc  
 1980  
 aaacctcaac gtgaagcagt atttgcccca ttatgaaact caaaaagagt ggaaatcaca  
 2040  
 40 ctttggcaaa agatgggaaa catttgcaca gaggaacaaa gcctacgacc ctctagcgat  
 2100  
 tctagcacct ggccaaagaa tattccaaaa gacaacagga aaattatctc ccatccaact  
 2160  
 45 cgcaaagtca aaggcaacag gaagtcctca aaggtaccat tacgcatcaa tactgccgaa  
 2220  
 acctagaact gtataa  
 2236  
 50  
 <210> 2  
 <211> 575  
 <212> PRT  
 <213> Arabidopsis thaliana  
 55  
 <400> 2  
 Met Gly Leu Thr Ser Ser Leu Arg Phe His Arg Gln Asn Asn Lys Thr  
 1 5 10 15  
 60 Phe Leu Gly Ile Phe Met Ile Leu Val Leu Ser Cys Ile Pro Gly Arg

1001401-1001401

	20							25					30				
	Thr	Asn	Leu	Cys	Ser	Asn	His	Ser	Val	Ser	Thr	Pro	Lys	Glu	Leu	Pro	
			35					40					45				
5	Ser	Ser	Asn	Pro	Ser	Asp	Ile	Arg	Ser	Ser	Leu	Val	Ser	Leu	Asp	Leu	
		50					55					60					
10	Glu	Gly	Tyr	Ile	Ser	Phe	Asp	Asp	Val	His	Asn	Val	Ala	Lys	Asp	Phe	
	65					70					75					80	
	Gly	Asn	Arg	Tyr	Gln	Leu	Pro	Pro	Leu	Ala	Ile	Leu	His	Pro	Arg	Ser	
					85					90					95		
15	Val	Phe	Asp	Ile	Ser	Ser	Met	Met	Lys	His	Ile	Val	His	Leu	Gly	Ser	
				100					105					110			
	Thr	Ser	Asn	Leu	Thr	Val	Ala	Ala	Arg	Gly	His	Gly	His	Ser	Leu	Gln	
			115					120					125				
20	Gly	Gln	Ala	Leu	Ala	His	Gln	Gly	Val	Val	Ile	Lys	Met	Glu	Ser	Leu	
		130					135					140					
25	Arg	Ser	Pro	Asp	Ile	Arg	Ile	Tyr	Lys	Gly	Lys	Gln	Pro	Tyr	Val	Asp	
	145					150					155					160	
	Val	Ser	Gly	Gly	Glu	Ile	Trp	Ile	Asn	Ile	Leu	Arg	Glu	Thr	Leu	Lys	
					165					170					175		
30	Tyr	Gly	Leu	Ser	Pro	Lys	Ser	Trp	Thr	Asp	Tyr	Leu	His	Leu	Thr	Val	
				180					185					190			
	Gly	Gly	Thr	Leu	Ser	Asn	Ala	Gly	Ile	Ser	Gly	Gln	Ala	Phe	Lys	His	
			195					200					205				
35	Gly	Pro	Gln	Ile	Asn	Asn	Val	Tyr	Gln	Leu	Glu	Ile	Val	Thr	Gly	Lys	
		210					215					220					
40	Gly	Glu	Val	Val	Thr	Cys	Ser	Glu	Lys	Arg	Asn	Ser	Glu	Leu	Phe	Phe	
	225					230					235					240	
	Ser	Val	Leu	Gly	Gly	Leu	Gly	Gln	Phe	Gly	Ile	Ile	Thr	Arg	Ala	Arg	
					245					250				255			
45	Ile	Ser	Leu	Glu	Pro	Ala	Pro	His	Met	Val	Lys	Trp	Ile	Arg	Val	Leu	
				260					265					270			
	Tyr	Ser	Asp	Phe	Ser	Ala	Phe	Ser	Arg	Asp	Gln	Glu	Tyr	Leu	Ile	Ser	
			275					280					285				
50	Lys	Glu	Lys	Thr	Phe	Asp	Tyr	Val	Glu	Gly	Phe	Val	Ile	Ile	Asn	Arg	
		290					295					300					
55	Thr	Asp	Leu	Leu	Asn	Asn	Trp	Arg	Ser	Ser	Phe	Ser	Pro	Asn	Asp	Ser	
	305					310					315					320	
	Thr	Gln	Ala	Ser	Arg	Phe	Lys	Ser	Asp	Gly	Lys	Thr	Leu	Tyr	Cys	Leu	
					325					330					335		
60	Glu	Val	Val	Lys	Tyr	Phe	Asn	Pro	Glu	Glu	Ala	Ser	Ser	Met	Asp	Gln	

1001401.21001

	340	345	350
	Glu Thr Gly Lys Leu Leu Ser	Glu Leu Asn Tyr Ile	Pro Ser Thr Leu
	355	360	365
5	Phe Ser Ser Glu Val Pro Tyr	Ile Glu Phe Leu Asp	Arg Val His Ile
	370	375	380
10	Ala Glu Arg Lys Leu Arg Ala Lys Gly Leu Trp Glu Val Pro His Pro		
	385	390	395 400
	Trp Leu Asn Leu Leu Ile Pro Lys Ser Ser Ile Tyr Gln Phe Ala Thr		
	405	410	415
15	Glu Val Phe Asn Asn Ile Leu Thr Ser Asn Asn Asn Gly Pro Ile Leu		
	420	425	430
	Ile Tyr Pro Val Asn Gln Ser Lys Trp Lys Lys His Thr Ser Leu Ile		
	435	440	445
20	Thr Pro Asn Glu Asp Ile Phe Tyr Leu Val Ala Phe Leu Pro Ser Ala		
	450	455	460
25	Val Pro Asn Ser Ser Gly Lys Asn Asp Leu Glu Tyr Leu Leu Lys Gln		
	465	470	475 480
	Asn Gln Arg Val Met Asn Phe Cys Ala Ala Ala Asn Leu Asn Val Lys		
	485	490	495
30	Gln Tyr Leu Pro His Tyr Glu Thr Gln Lys Glu Trp Lys Ser His Phe		
	500	505	510
	Gly Lys Arg Trp Glu Thr Phe Ala Gln Arg Lys Gln Ala Tyr Asp Pro		
	515	520	525
35	Leu Ala Ile Leu Ala Pro Gly Gln Arg Ile Phe Gln Lys Thr Thr Gly		
	530	535	540
40	Lys Leu Ser Pro Ile Gln Leu Ala Lys Ser Lys Ala Thr Gly Ser Pro		
	545	550	555 560
	Gln Arg Tyr His Tyr Ala Ser Ile Leu Pro Lys Pro Arg Thr Val		
	565	570	575
45			
	<210> 3		
	<211> 2991		
	<212> DNA		
50	<213> Arabidopsis thaliana		
	<400> 3		
	atggctaatac ttcgtttaat gatcacttta atcacgggtt taatgatcac caaatcatca		
	60		
55	aacggtatta aaattgattt acctaaatcc cttaacctca ccctctctac cgatccttcc		
	120		
	atcatctccg cagcctctca tgacttcgga aacataacca ccgtgacccc cggcggcgta		
	180		
60	atctgcccct cctccaccgc tgatatctct cgtctcctcc aatacgccgc aaacggaaaa		
	240		

10014101.121001

10014101.131001

agtacattcc aagtagcggc tcgtggccaa ggccactcct taaacggcca agcctcggtc  
 300  
 tccggcggag taatcgtcaa catgacgtgt atcactgacg tgggtggtttc aaaagacaag  
 360  
 5 aagtacgctg acgtggcggc cgggacgtta tgggtggatg tgcttaagaa gacggcggag  
 420  
 aaaggggtgt cgccggtttc ttggacggat tatttgcata taaccgtcgg aggaacgttg  
 480  
 10 tcgaatggtg gaattggtgg tcaagtgttt cgaaacggtc ctcttgttag taacgtcctt  
 540  
 gaattggacg ttattactgg tacgcatctt ctaaactttg atgtacatac aacaacaaaa  
 600  
 actgtttttg ttttatagta tttttcattt tttgtacat aggttttatg ttttatagtt  
 660  
 15 gtgctaaact tcttgcacca cacgtaagtc ttcgaaacac aaaatgcgta acgcatctat  
 720  
 atgttttttg tacatattga atgttggttca tgagaaataa agtaattaca tatacacaca  
 780  
 20 tttattgtcg tacatatata aataattaaa gacaaatttt cacaattggg agcgtgttaa  
 840  
 tttgggattt ttgtaatgta catgcatgac gcatgcatat ggagcttttc ggtttttcta  
 900  
 gatttgtgta gtatttcaaa tatatcattt attttctttc gaataaagag gtggtatatt  
 960  
 25 tttaaaatag caacatttca gaatttttct ttgaatttac acttttttaa ttgttattgt  
 1020  
 taatatggat tttgaataaa taatttcagg gaaagggtgaa atgttgacat gctcgcgaca  
 1080  
 30 gctaaacca gaattgttct atggagtgtt aggagggttg ggtcaatttg gaattataac  
 1140  
 gagagccaga attgttttgg accatgcacc taaacgggta cgtatcatca tattttacca  
 1200  
 tttgttttag tcagcattca tttttcatta gtaattccgt ttcaatttct aaattttttt  
 1260  
 35 agtcaataga aaatgattct tatgtcagag cttgattatt tagtgatttt tattgagata  
 1320  
 aaataaaaata taacctaacg gaaataatta ttttactaat cggataatgt ctgattaaaa  
 1380  
 40 cattttatga tattacacta agagagttag agacgtatgg atcacaaaac atgaagcttt  
 1440  
 cttagatggg atcctaaaac taaagttagg tacaagtttg gaatttaggt caaatgctta  
 1500  
 agttgcatta atttgaacaa aatctatgca ttgaataaaa aaaagatatg gattatttta  
 1560  
 45 taaagtatag tccttgtaat cctaggactt gttgtctaata cttgtcttat gcgtgcaaat  
 1620  
 ctttttgatg tcaatatata atccttgttt attagagtca agctctttca ttagtcaact  
 1680  
 actcaaatat actccaaagt ttagaatata gtcttctgac taattagaat cttacaaccg  
 1740  
 50 ataaacgtta caatttggtt atcattttta aaaacagatt tggtcataat atacgatgac  
 1800  
 gttctgtttt agtttcatct attcacaaat tttatataat tattttcaag aaaatattga  
 1860  
 55 aatactatac tgtaatatgg tttctttata tatgtgtgta taaattaaat gggattgttt  
 1920  
 tctctaaatg aaattgtgta ggccaaatgg tttcggatgc tctacagtga tttcacaact  
 1980  
 60 tttacaaagg accaagaacg tttgatatca atggcaaacg atattggagt cgactattta  
 2040

10014301.121001

gaagggtcaaa tattttctatc aaacgggtgtc gttgacacct cttttttccc accttcagat  
2100  
caatctaaag tcgctgatct agtcaagcaa cacgggtatca tctatgttct tgaagtagcc  
2160  
5 aagtattatg atgatcccaa tctcccatc atcagcaagg tactacacat ttacattttc  
2220  
atcatcgttt ttatcatacc ataagatatt taaatgattc atcattgcac cacattaaga  
2280  
tattcatcat catcatcggt acattttttt ttgcatctta tgcttctcat aatctactat  
10 2340  
tgtgtagggt attgacacat taacgaaaac attaagttac ttgcccgggt tcatatcaat  
2400  
gcacgacgtg gcctacttcg atttcttgaa ccgtgtacat gtcgaagaaa ataaactcag  
2460  
15 atctttggga ttatgggaac ttcctcatcc ttggcttaac ctctacgttc ctaaactctc  
2520  
gattctcgat tttcataacg gtgttgtaa agacattctt cttagcaaaa aatcagcttc  
2580  
gggactcgct cttctctatc caacaaaccg gaataagtac atacttctct tcattcatat  
20 2640  
ttatcttcaa gaaccaaagt aaataaattt ctatgaactg attatgctgt tattggttaga  
2700  
tgggacaatc gtagtgcggc gatgatacca gagatcgatg aagatgttat atatattatc  
2760  
25 ggactactac aatccgctac cccaaaggat cttccagaag tggagagcgt taacgagaag  
2820  
ataattaggt tttgcaagga ttcaggtatt aagattaagc aatatctaata gcattatact  
2880  
agtaaagaag attggattga gcatttttga tcaaaatggg atgatttttc gaagaggaaa  
30 2940  
gatctatttg atcccaagaa actggttatct ccagggcaag acatcttttg a  
2991

35 <210> 4  
<211> 501  
<212> PRT  
<213> Arabidopsis thaliana

40 <400> 4  
Met Ala Asn Leu Arg Leu Met Ile Thr Leu Ile Thr Val Leu Met Ile  
1 5 10 15

45 Thr Lys Ser Ser Asn Gly Ile Lys Ile Asp Leu Pro Lys Ser Leu Asn  
20 25 30

Leu Thr Leu Ser Thr Asp Pro Ser Ile Ile Ser Ala Ala Ser His Asp  
35 40 45

50 Phe Gly Asn Ile Thr Thr Val Thr Pro Gly Gly Val Ile Cys Pro Ser  
50 55 60

Ser Thr Ala Asp Ile Ser Arg Leu Leu Gln Tyr Ala Ala Asn Gly Lys  
65 70 75 80

55 Ser Thr Phe Gln Val Ala Ala Arg Gly Gln Gly His Ser Leu Asn Gly  
85 90 95

60 Gln Ala Ser Val Ser Gly Gly Val Ile Val Asn Met Thr Cys Ile Thr  
100 105 110



10014101-121001

	Asp	Val	Val	Val	Ser	Lys	Asp	Lys	Lys	Tyr	Ala	Asp	Val	Ala	Ala	Gly
			115					120					125			
5	Thr	Leu	Trp	Val	Asp	Val	Leu	Lys	Lys	Thr	Ala	Glu	Lys	Gly	Val	Ser
		130					135					140				
	Pro	Val	Ser	Trp	Thr	Asp	Tyr	Leu	His	Ile	Thr	Val	Gly	Gly	Thr	Leu
	145					150					155					160
10	Ser	Asn	Gly	Gly	Ile	Gly	Gly	Gln	Val	Phe	Arg	Asn	Gly	Pro	Leu	Val
					165					170					175	
	Ser	Asn	Val	Leu	Glu	Leu	Asp	Val	Ile	Thr	Gly	Lys	Gly	Glu	Met	Leu
15				180					185					190		
	Thr	Cys	Ser	Arg	Gln	Leu	Asn	Pro	Glu	Leu	Phe	Tyr	Gly	Val	Leu	Gly
			195					200					205			
20	Gly	Leu	Gly	Gln	Phe	Gly	Ile	Ile	Thr	Arg	Ala	Arg	Ile	Val	Leu	Asp
		210					215					220				
	His	Ala	Pro	Lys	Arg	Ala	Lys	Trp	Phe	Arg	Met	Leu	Tyr	Ser	Asp	Phe
	225					230					235					240
25	Thr	Thr	Phe	Thr	Lys	Asp	Gln	Glu	Arg	Leu	Ile	Ser	Met	Ala	Asn	Asp
					245					250					255	
	Ile	Gly	Val	Asp	Tyr	Leu	Glu	Gly	Gln	Ile	Phe	Leu	Ser	Asn	Gly	Val
30				260					265					270		
	Val	Asp	Thr	Ser	Phe	Phe	Pro	Pro	Ser	Asp	Gln	Ser	Lys	Val	Ala	Asp
			275					280					285			
35	Leu	Val	Lys	Gln	His	Gly	Ile	Ile	Tyr	Val	Leu	Glu	Val	Ala	Lys	Tyr
		290					295					300				
	Tyr	Asp	Asp	Pro	Asn	Leu	Pro	Ile	Ile	Ser	Lys	Val	Ile	Asp	Thr	Leu
	305					310					315					320
40	Thr	Lys	Thr	Leu	Ser	Tyr	Leu	Pro	Gly	Phe	Ile	Ser	Met	His	Asp	Val
					325					330					335	
	Ala	Tyr	Phe	Asp	Phe	Leu	Asn	Arg	Val	His	Val	Glu	Glu	Asn	Lys	Leu
45				340					345					350		
	Arg	Ser	Leu	Gly	Leu	Trp	Glu	Leu	Pro	His	Pro	Trp	Leu	Asn	Leu	Tyr
			355					360					365			
50	Val	Pro	Lys	Ser	Arg	Ile	Leu	Asp	Phe	His	Asn	Gly	Val	Val	Lys	Asp
		370					375					380				
	Ile	Leu	Leu	Lys	Gln	Lys	Ser	Ala	Ser	Gly	Leu	Ala	Leu	Leu	Tyr	Pro
	385					390					395					400
55	Thr	Asn	Arg	Asn	Lys	Trp	Asp	Asn	Arg	Met	Ser	Ala	Met	Ile	Pro	Glu
					405					410					415	
	Ile	Asp	Glu	Asp	Val	Ile	Tyr	Ile	Ile	Gly	Leu	Leu	Gln	Ser	Ala	Thr
60				420					425					430		

Pro Lys Asp Leu Pro Glu Val Glu Ser Val Asn Glu Lys Ile Ile Arg  
435 440 445

5 Phe Cys Lys Asp Ser Gly Ile Lys Ile Lys Gln Tyr Leu Met His Tyr  
450 455 460

Thr Ser Lys Glu Asp Trp Ile Glu His Phe Gly Ser Lys Trp Asp Asp  
465 470 475 480

10 Phe Ser Lys Arg Lys Asp Leu Phe Asp Pro Lys Lys Leu Leu Ser Pro  
485 490 495

Gly Gln Asp Ile Phe  
15 500

<210> 5  
20 <211> 3302  
<212> DNA  
<213> Arabidopsis thaliana

<400> 5  
25 atggcgagtt ataatcttcg ttcacaagtt cgtcttatag caataacaat agtaatcatc  
60  
attactctct caactccgat cacaaccaac acatcaccac aaccatggaa tatectttca  
120  
cacaacgaat tcgccggaaa actcacctcc tctctctcct ccgtcgaatc agccgccaca  
180  
30 gatttcggcc acgtcaccaa aatcttcctt tccgccgtct taatcccttc ctccggtgaa  
240  
gacatcacag atctcataaa actctctttt gactctcaac tgtcttttcc tttagccgct  
300  
35 cgtgggtcacg gacacagcca ccgtggccaa gcctcggcta aagacggagt tgtgggtcaac  
360  
atgcggtcca tggtaaaccg ggatcgaggt atcaagggtg ctaggacctg tttatatggt  
420  
gacgtggacg ctgcgtggct atggattgag gtggtgaata aaactttgga gttaggggtta  
480  
40 acgccggttt cttggacgga ttatttgtat ttaacagtcg gtgggacggt atcaaaccgc  
540  
ggaattagtg gacaaacggt tcggtacggt ccacagatca ctaatgttct agagatggat  
600  
45 gttattactg gtacgtacca cgatcttttt cacacagaga ttaaaaaaaaa cagtaatagt  
660  
gattttaact tcgtacgttt ctgatagaca acaaagaact tcgtacgttt ttcgaagttt  
720  
tttcgtcttt ttcatttttag atctgcgcgg ccatttttgg ttatgctatt gtttggttgt  
780  
50 attggttgtc tctgtttatt tatttctcga acttggtgat agcttttctt cttttcacac  
840  
atcaatctaa tcaccttttt tggctttaag attagaaaga agatacggac taggtaaaaa  
900  
55 taggtggttg taaacgtaga cgcattaaaa aaatattggt ttttttattt tttgataagc  
960  
aaaattggtg gttggtctaa gattataaac ttgatattaa tgcaaaggtc gatctagcaa  
1020  
tagaagatta atcaatattc ttggtgtttt aacaacagat tatttcatca ttaaaatcgt  
60 1080

10014101.121004



10014101-1001

gaaacaaaga aatttttggtg gtatacatta cgtgtagttt tgtagttta ttaaaaaaaa  
1140  
tagtatatag ttttggttaa acgcgattta tttagtaaca cattagtata ttacacgttt  
1200  
5 aaccaactaa actttttttt ttgaataatt atgttctata tttcttactc aaattatgca  
1260  
aatttcgtgg attcgaagtc aaatttctgc gaaatttaca tggatcatata ttataaaact  
1320  
10 gttcatataa cccggtgaac aaacagacaa ttaaggggtt gaatgggttac ggcggttggg  
1380  
gcggacacaa ccgtcaatag atcagaccgt tttttattta ccattcatca attatattcc  
1440  
gcagtgggtt ggggtaaaaa aatagaaga aaaccgcagc ggaccaattc cataccgttt  
1500  
15 ttacatacaa ataaacatgg tgcgcaacgg tttattgtcc gcctcaaaaa tgaaatggac  
1560  
taaaccgcag ataaattaga ccgctttgtc cgctgcctcc attcatagac taaaaaaaaa  
1620  
caacaaaaa aaaaatggtc ccacgcccac gattttacac gaggtttctt gtggcgtaag  
20 1680  
gacaaaactc aaaagttcat aacgtttggg cctaaccagg tgtaatggat taagtaacag  
1740  
tcaattttct tattatagct gtatccatta tgtccacata tgcattcata tacattacac  
1800  
25 tgttggtctc aagtgtagtt agattacgaa gactttcaag ttccattttt tggtaggag  
1860  
ataaacataa tttaatgata ccgactttag cactctaggc tcaaaacaag tacagaagag  
1920  
aatagtttta tttcaaactc gttgcattgt tgtatcaatt aattgtgta gtctttgtat  
30 1980  
attcttacat aacgggtccaa gtttggtgaa atagtttact tactaaactt ttcctaattg  
2040  
ggtcaaattt tatttttatag gaaaaggaga gattgcaact tgttccaagg acatgaactc  
2100  
35 ggatcttttc ttcgcggtgt taggaggttt gggatcaattc ggcatataa caagagccag  
2160  
aattaaactt gaagtagctc cgaaaagggt atgttaaatt tgtaaattat gcaactacag  
2220  
aaaattctat gaaatttatg aatgaacata tatgcatttt tggatttttg taggccaagt  
40 2280  
ggttaagggt tctatacata gatttctccg aattcacaag agatcaagaa cgagtgatat  
2340  
cgaaaacgga cgggtgtagat ttcttagaag gttccattat ggtggaccat ggcccaccgg  
2400  
45 ataactggag atccacgtat tatccaccgt ccgatcactt gaggatcgcc tcaatgggtca  
2460  
aacgacatcg tgtcatctac tgccttgaag tcgtcaagta ttacgacgaa acttctcaat  
2520  
acacagtcaa cgagggtccgt acatacatc aatcataaat catacatgta taattgggag  
50 2580  
atctttatgc attattcaat tatattaatt tacttttagtt atttaactta tgcaggaaat  
2640  
ggaggagtta agcgatagtt taaaccatgt aagaggggtt atgtacgaga aagatgtgac  
2700  
55 gtatatggat ttcctaaacc gagttcgaac cggagagcta aacctgaaat ccaaaggcca  
2760  
atgggatggt ccacatccat ggcttaattc ctctgtacca aaaactcaaa tctccaaatt  
2820  
tgatgatggt gtttttaagg gtattatcct aagaaataac atcactagcg gtctgtttct  
60 2880

tgtttatcct atgaatcgca acaagtaagt ttaactcgat attgcaaaat ttactatcta  
 2940  
 cattttcggt ttggaatccg aaatattctt acaagctaatt tttatgcggc gtttttaggt  
 3000  
 5 ggaatgatcg gatgtctgcc gctatacccg aggaagatgt attttatgcy gtaggggttt  
 3060  
 taagatccgc gggttttgac aattgggagg cttttgatca agaaaacatg gaaatactga  
 3120  
 agttttgtga ggatgctaatt atgggggtta tacaatatct tccttatcat tcatcacaag  
 10 3180  
 aaggatgggt tagacatttt ggtccgaggt ggaatatttt cgtagagaga aaatataaat  
 3240  
 atgatcccaa aatgatatta tcaccgggac aaaatatatt tcaaaaaata aactcgagtt  
 3300  
 15 ag  
 3302  
  
 <210> 6  
 20 <211> 523  
 <212> PRT  
 <213> Arabidopsis thaliana  
  
 <400> 6  
 25 Met Ala Ser Tyr Asn Leu Arg Ser Gln Val Arg Leu Ile Ala Ile Thr  
 1 5 10 15  
 Ile Val Ile Ile Ile Thr Leu Ser Thr Pro Ile Thr Thr Asn Thr Ser  
 20 25 30  
 30 Pro Gln Pro Trp Asn Ile Leu Ser His Asn Glu Phe Ala Gly Lys Leu  
 35 40 45  
 Thr Ser Ser Ser Ser Ser Val Glu Ser Ala Ala Thr Asp Phe Gly His  
 35 50 55 60  
 Val Thr Lys Ile Phe Pro Ser Ala Val Leu Ile Pro Ser Ser Val Glu  
 65 70 75 80  
 40 Asp Ile Thr Asp Leu Ile Lys Leu Ser Phe Asp Ser Gln Leu Ser Phe  
 85 90 95  
 Pro Leu Ala Ala Arg Gly His Gly His Ser His Arg Gly Gln Ala Ser  
 100 105 110  
 45 Ala Lys Asp Gly Val Val Val Asn Met Arg Ser Met Val Asn Arg Asp  
 115 120 125  
 Arg Gly Ile Lys Val Ser Arg Thr Cys Leu Tyr Val Asp Val Asp Ala  
 50 130 135 140  
 Ala Trp Leu Trp Ile Glu Val Leu Asn Lys Thr Leu Glu Leu Gly Leu  
 145 150 155 160  
 55 Thr Pro Val Ser Trp Thr Asp Tyr Leu Tyr Leu Thr Val Gly Gly Thr  
 165 170 175  
 Leu Ser Asn Gly Gly Ile Ser Gly Gln Thr Phe Arg Tyr Gly Pro Gln  
 180 185 190  
 60

1001401-1001001

	Ile	Thr	Asn	Val	Leu	Glu	Met	Asp	Val	Ile	Thr	Gly	Lys	Gly	Glu	Ile	
			195					200					205				
5	Ala	Thr	Cys	Ser	Lys	Asp	Met	Asn	Ser	Asp	Leu	Phe	Phe	Ala	Val	Leu	
		210					215					220					
	Gly	Gly	Leu	Gly	Gln	Phe	Gly	Ile	Ile	Thr	Arg	Ala	Arg	Ile	Lys	Leu	
	225					230					235					240	
10	Glu	Val	Ala	Pro	Lys	Arg	Ala	Lys	Trp	Leu	Arg	Phe	Leu	Tyr	Ile	Asp	
					245					250					255		
	Phe	Ser	Glu	Phe	Thr	Arg	Asp	Gln	Glu	Arg	Val	Ile	Ser	Lys	Thr	Asp	
				260					265					270			
15	Gly	Val	Asp	Phe	Leu	Glu	Gly	Ser	Ile	Met	Val	Asp	His	Gly	Pro	Pro	
			275					280					285				
	Asp	Asn	Trp	Arg	Ser	Thr	Tyr	Tyr	Pro	Pro	Ser	Asp	His	Leu	Arg	Ile	
20		290					295					300					
	Ala	Ser	Met	Val	Lys	Arg	His	Arg	Val	Ile	Tyr	Cys	Leu	Glu	Val	Val	
	305					310					315					320	
25	Lys	Tyr	Tyr	Asp	Glu	Thr	Ser	Gln	Tyr	Thr	Val	Asn	Glu	Glu	Met	Glu	
					325					330					335		
	Glu	Leu	Ser	Asp	Ser	Leu	Asn	His	Val	Arg	Gly	Phe	Met	Tyr	Glu	Lys	
				340					345					350			
30	Asp	Val	Thr	Tyr	Met	Asp	Phe	Leu	Asn	Arg	Val	Arg	Thr	Gly	Glu	Leu	
			355					360					365				
	Asn	Leu	Lys	Ser	Lys	Gly	Gln	Trp	Asp	Val	Pro	His	Pro	Trp	Leu	Asn	
35		370					375					380					
	Leu	Phe	Val	Pro	Lys	Thr	Gln	Ile	Ser	Lys	Phe	Asp	Asp	Gly	Val	Phe	
	385					390					395					400	
40	Lys	Gly	Ile	Ile	Leu	Arg	Asn	Asn	Ile	Thr	Ser	Gly	Pro	Val	Leu	Val	
					405					410					415		
	Tyr	Pro	Met	Asn	Arg	Asn	Lys	Trp	Asn	Asp	Arg	Met	Ser	Ala	Ala	Ile	
				420					425					430			
45	Pro	Glu	Glu	Asp	Val	Phe	Tyr	Ala	Val	Gly	Phe	Leu	Arg	Ser	Ala	Gly	
			435					440					445				
	Phe	Asp	Asn	Trp	Glu	Ala	Phe	Asp	Gln	Glu	Asn	Met	Glu	Ile	Leu	Lys	
50		450					455					460					
	Phe	Cys	Glu	Asp	Ala	Asn	Met	Gly	Val	Ile	Gln	Tyr	Leu	Pro	Tyr	His	
	465				470						475					480	
55	Ser	Ser	Gln	Glu	Gly	Trp	Val	Arg	His	Phe	Gly	Pro	Arg	Trp	Asn	Ile	
					485					490					495		
	Phe	Val	Glu	Arg	Lys	Tyr	Lys	Tyr	Asp	Pro	Lys	Met	Ile	Leu	Ser	Pro	
				500					505					510			
60																	

10014101 121001

Gly Gln Asn Ile Phe Gln Lys Ile Asn Ser Ser  
515 520

5  
<210> 7  
<211> 2782  
<212> DNA  
<213> Arabidopsis thaliana

10  
<400> 7  
atgactaata ctctctgttt aagcctcatc accctaataa cgctttttat aagtttaacc  
60  
ccaaccttaa tcaaatcaga tgagggcatt gatgttttct taccatatac actcaacctt  
15  
120  
acggtcctaa ccgatccctt ctccatctct gccgcttctc acgacttcgg taacataacc  
180  
gacgaaaatc ccggcgccgt cctctgccct tcctccacca cggagggtggc tcgtctcctc  
240  
20  
cgtttcgcta acggaggatt ctcttacaat aaaggctcaa ccagccccgc gtctactttc  
300  
aaagtggctg ctcgaggcca aggccactcc ctccgtggcc aagcctctgc acccggagggt  
360  
gtcgtcgtga acatgacgtg tctcgccatg gcggctaaac cagcggcggt tgttatctcg  
25  
420  
gcagacggga cttacgctga cgtggctgcc gggacgatgt ggggtggatgt tctgaaggcg  
480  
gcgggtggata gaggcgtctc gccgggttaca tggacggatt atttgtatct cagcgtcggc  
540  
30  
gggacgttgt cgaacgctgg aatcgggtgg cagacgttta gacacggccc tcagattagt  
600  
aacgttcatt agcttgacgt tattaccggt acgtaaatac caaaacttca ctaatctcgt  
660  
tacaattttt taattttttg gtaatatata ttttgtacgg ctcaactctt aattaagaat  
35  
720  
gaaacagtat ctatgatctt ctagatgctc tttttttgtc tgcaagcttt aattgtagta  
780  
acatcagcga tatatatatc acatgcatgt gtattattga tgataatata taatgtttta  
840  
40  
gttacaaatt tgattctcaa ggtaaaaactc acacgccata accagtataa aactccaaaa  
900  
atcacgtttt ggtcagaaat acatatcctt cattaacagt agttatgcta taatttgtga  
960  
ttataaataa ctccggaggt tgttcacaat actaaatttc aggaaaagggt gaaatgatga  
45  
1020  
cttgctctcc aaagttaaac cctgaattgt tctatggagt tttaggaggt ttgggtcaat  
1080  
tcggtattat aacgagggcc aggattgcgt tggatcatgc acccacaagg gtatgtatca  
1140  
50  
tgcattctata gtgtaatcaa tttataattt taatgtagtg gtcctaaatc caaaatttga  
1200  
tttgatttgg ttggaacgta cgtatatata ataagtcaaa aggctgattt tgaagacgaa  
1260  
tttatatact tttgttgaat taaatctgat tttgcttacg ttttattaga ttctgcgtaa  
1320  
55  
taaatacctag gacttgctcg agtgtaatct tgtcttatgc ttgcaaactt tggtgatgtc  
1380  
aatatcctaat ctttttttatt atatttccct acgtaagttt tagatatagt tatttttaac  
1440

10014101.1E1001

tgctataaat tgtgtacgta tagacttttag ataaaaagtt gtgggtcgctt gcacctattt  
 1500  
 gtttatcgct atagtgattc aaaggtctat atatgattct tggtttttct ttttgaaaaa  
 1560  
 5 aatagaccat acaatccaag gaagatgatc ttaaattggac taatttatgg atataaattg  
 1620  
 atatacaaat ctgcaggtga aatgggtctcg cataactctac agtgacttct cggctttttaa  
 1680  
 aagagaccaa gagcgttttaa tatcaatgac caatgatctc ggagttgact ttttggaagg  
 1740  
 10 tcaacttatg atgtcaaatg gcttcgtaga cacctctttc ttcccactct ccgatcaaac  
 1800  
 aagagtcgca tctcttgtga atgaccaccg gatcatctat gttctcgaag tagccaagta  
 1860  
 15 ttatgacaga accacccttc ccattattga ccaggtacta aaatccatta ttcatgatga  
 1920  
 ttatcttcac acaatcagta tcatacacia ttaccatcat cacttgatcat atatgatcca  
 1980  
 aagtaaata atcacatgat ataaataaat cgttcaaatac ttttttttta aagaataaaa  
 2040  
 20 gaatcatttt caagcattac tcatacacat ctacgaatca ccgtgaccat atataaccat  
 2100  
 acgcttatta aataatcatt tttgtttgta ggtgattgac acgttaagta gaactctagg  
 2160  
 25 tttcgctcca gggtttatgt tcgtacaaga tgttccgtat ttcgatttct tgaaccgtgt  
 2220  
 ccgaaacgaa gaagataaac tcagatcttt aggactatgg gaagttcctc atccatggct  
 2280  
 taacatcttt gtcccgggggt ctcgaatcca agattttcat gatgggtgta ttaatggcct  
 2340  
 30 tcttctaaac caaacctcaa cttctgggtgt tactctcttc tatcccacaa accgaaacaa  
 2400  
 gtaaataattt actttttgat tttgttttat ttgaaagtat atcccaataa tgtatgttaa  
 2460  
 35 attgttaaca agaatttatt ttattaatag atggaacaac cgcattgtcaa cgatgacacc  
 2520  
 ggacgaagat gttttttatg tgatcggatt actgcaatca gctgggtggat ctcaaaattg  
 2580  
 gcaagaactt gaaaatctca acgacaaggt tattcagttt tgtgaaaact cgggaattaa  
 2640  
 40 gattaaggaa tatttgatgc actatacaag aaaagaagat tgggttaaac attttgacc  
 2700  
 aaaatgggat gatttttttaa gaaagaaaat tatgtttgat cccaaaagac tattgtctcc  
 2760  
 45 aggacaagac atattttaatt aa  
 2782

50 <210> 8  
 <211> 524  
 <212> PRT  
 <213> Arabidopsis thaliana

55 <400> 8  
 Met Thr Asn Thr Leu Cys Leu Ser Leu Ile Thr Leu Ile Thr Leu Phe  
 1 5 10 15

Ile Ser Leu Thr Pro Thr Leu Ile Lys Ser Asp Glu Gly Ile Asp Val  
 20 25 30

60

10014101-121001

Phe Leu Pro Ile Ser Leu Asn Leu Thr Val Leu Thr Asp Pro Phe Ser  
 35 40 45  
 5 Ile Ser Ala Ala Ser His Asp Phe Gly Asn Ile Thr Asp Glu Asn Pro  
 50 55 60  
 Gly Ala Val Leu Cys Pro Ser Ser Thr Thr Glu Val Ala Arg Leu Leu  
 65 70 75 80  
 10 Arg Phe Ala Asn Gly Gly Phe Ser Tyr Asn Lys Gly Ser Thr Ser Pro  
 85 90 95  
 Ala Ser Thr Phe Lys Val Ala Ala Arg Gly Gln Gly His Ser Leu Arg  
 100 105 110  
 15 Gly Gln Ala Ser Ala Pro Gly Gly Val Val Val Asn Met Thr Cys Leu  
 115 120 125  
 Ala Met Ala Ala Lys Pro Ala Ala Val Val Ile Ser Ala Asp Gly Thr  
 130 135 140  
 20 Tyr Ala Asp Val Ala Ala Gly Thr Met Trp Val Asp Val Leu Lys Ala  
 145 150 155 160  
 25 Ala Val Asp Arg Gly Val Ser Pro Val Thr Trp Thr Asp Tyr Leu Tyr  
 165 170 175  
 Leu Ser Val Gly Gly Thr Leu Ser Asn Ala Gly Ile Gly Gly Gln Thr  
 180 185 190  
 30 Phe Arg His Gly Pro Gln Ile Ser Asn Val His Glu Leu Asp Val Ile  
 195 200 205  
 Thr Gly Lys Gly Glu Met Met Thr Cys Ser Pro Lys Leu Asn Pro Glu  
 210 215 220  
 Leu Phe Tyr Gly Val Leu Gly Gly Leu Gly Gln Phe Gly Ile Ile Thr  
 225 230 235 240  
 40 Arg Ala Arg Ile Ala Leu Asp His Ala Pro Thr Arg Val Lys Trp Ser  
 245 250 255  
 Arg Ile Leu Tyr Ser Asp Phe Ser Ala Phe Lys Arg Asp Gln Glu Arg  
 260 265 270  
 45 Leu Ile Ser Met Thr Asn Asp Leu Gly Val Asp Phe Leu Glu Gly Gln  
 275 280 285  
 Leu Met Met Ser Asn Gly Phe Val Asp Thr Ser Phe Phe Pro Leu Ser  
 290 295 300  
 Asp Gln Thr Arg Val Ala Ser Leu Val Asn Asp His Arg Ile Ile Tyr  
 305 310 315 320  
 55 Val Leu Glu Val Ala Lys Tyr Tyr Asp Arg Thr Thr Leu Pro Ile Ile  
 325 330 335  
 Asp Gln Val Ile Asp Thr Leu Ser Arg Thr Leu Gly Phe Ala Pro Gly  
 340 345 350  
 60

10014101-1001



Phe Met Phe Val Gln Asp Val Pro Tyr Phe Asp Phe Leu Asn Arg Val  
355 360 365

5 Arg Asn Glu Glu Asp Lys Leu Arg Ser Leu Gly Leu Trp Glu Val Pro  
370 375 380

His Pro Trp Leu Asn Ile Phe Val Pro Gly Ser Arg Ile Gln Asp Phe  
385 390 395 400

10 His Asp Gly Val Ile Asn Gly Leu Leu Leu Asn Gln Thr Ser Thr Ser  
405 410 415

Gly Val Thr Leu Phe Tyr Pro Thr Asn Arg Asn Lys Trp Asn Asn Arg  
420 425 430

15 Met Ser Thr Met Thr Pro Asp Glu Asp Val Phe Tyr Val Ile Gly Leu  
435 440 445

Leu Gln Ser Ala Gly Gly Ser Gln Asn Trp Gln Glu Leu Glu Asn Leu  
450 455 460

Asn Asp Lys Val Ile Gln Phe Cys Glu Asn Ser Gly Ile Lys Ile Lys  
465 470 475 480

25 Glu Tyr Leu Met His Tyr Thr Arg Lys Glu Asp Trp Val Lys His Phe  
485 490 495

Gly Pro Lys Trp Asp Asp Phe Leu Arg Lys Lys Ile Met Phe Asp Pro  
500 505 510

30 Lys Arg Leu Leu Ser Pro Gly Gln Asp Ile Phe Asn  
515 520

35  
<210> 9  
<211> 2805  
<212> DNA  
<213> Arabidopsis thaliana

40  
<400> 9  
atgacgtcaa gctttcttct cctgacgttc gccatatgta aactgatcat agccgtgggt  
60  
ctaaacgtgg gccccagtga gctcctccgc atcggagcca tagatgtcga cggccacttc  
45 120  
accgtccacc cttccgactt agcctccgtc tcttcagact tcggtatgct gaagtcacct  
180  
gaagagccat tggccgtgct tcatccatca tcggccgaag acgtggcacg actcgtcaga  
240  
50 acagcttacg gttcagccac ggcgtttccg gtctcagccc gaggccacgg ccattccata  
300  
aacggacaag ccgcggcggg gaggaacggt gtggtggttg aaatgaacca cggcgtaacc  
360  
gggacgcca agccactcgt ccgaccggat gaaatgtatg tggatgtatg ggggtggagag  
55 420  
ttatgggtcg atgtgttgaa gaaaacgttg gagcatggct tagcaccaaa atcatggacg  
480  
gattacttgt atctaaccgt tggaggtaca ctctccaatg caggaatcag tgggtcaagct  
540

10014101-10014101

tttcaccatg gtcctcaa at tagtaacgtc cttgagctcg acgttgtaac tggtagtat  
600  
taaaacattc aagttcatat attttaaatg cttttgtctg aagttttact aataacaaga  
660  
5 aattgatacc aaaaagtagg gaaaggagag gtgatgagat gctcagaaga agagaacaca  
720  
aggctattcc atggagttct tgggtggatta ggtcaatttg ggatcatcac tcgagcacga  
780  
atctctctcg aaccagctcc ccaaagggta atattttttt aatgactagc tatcaaaaat  
840  
10 ccctggcggg tccatacgtt gtaatctttt tagtttttac tgttgatggg attttttata  
900  
tattttggat aataaaaacc taaaatggta tattgtgatg acaggtgaga tggatacggg  
960  
15 tattgtattc gagcttcaaa gtgtttacgg aggaccaaga gtacttaatc tcaatgcatg  
1020  
gtcaattaaa gtttgattac gtggaagggt ttgtgattgt ggacgaagga ctctgcaaca  
1080  
attggagatc ttctttcttc tctccacgta accccgtcaa gatctctct gttagttcca  
1140  
20 acggctctgt tttgtattgc cttgagatca ccaagaacta ccacgactcc gactccgaaa  
1200  
tcgttgatca ggtcactttc attattcact tagaaaaaag cgatattttc attttttata  
1260  
25 ttgatgaata tctggaagga tttaacgcta tgcgactatt gggaaatcat tatgaaaaa  
1320  
tatttagttt atatgattga aagtggctct catagtattt ttgttggtgc gactttatta  
1380  
taacttaa at ttggaagagg acatgaagaa gaagccagag aggatctaca gagatctagc  
1440  
30 ttttccacct gaacttaata atgcacattt atataattat ttttcttctt ctaaagttta  
1500  
gtttatcact agcgaattaa tcatggttac taattaagta gtggacaggg tcatggacca  
1560  
35 ctactcacc aaataatgat tcctctttac tcttaagttt aattttaata aaaccaactc  
1620  
tactggaatc ttaacttate cttggttttg gtaggctttt atagcaacac ggttttttta  
1680  
attttcctat tccagatttt gtatattaaa tgtcgatttt ttttcttttt gtttcaggaa  
1740  
40 gttgagattc tgatgaagaa attgaatttc ataccgacat cggctctttac aacggattta  
1800  
caatatgtgg actttctcga ccgggtacac aaggccgaat tgaagctccg gtccaagaat  
1860  
45 ttatgggagg ttccacaccc atgggtcaac ctcttcgtgc caaatcaag aatctctgac  
1920  
ttcgataaag gcgttttcaa gggcattttg ggaaataaaa caagtggccc tattcttate  
1980  
taccatga acaaagacaa gtaagtcttg acattaccat tgattactac ttctaaattt  
2040  
50 cttctctaga aaaaagaata aaacgagttt tgcattgcat gcatgcaaag ttacacttgt  
2100  
ggggattaat tagtgggtcca agaaaaaag tttgtcaaaa ttgaaaaaaa ctagacacgt  
2160  
55 ggtacatggg attgtccgaa aaacgttggt cacatgtgca tcgaaccagc taagattgac  
2220  
aacaacactt cgtcggctcg tatttctctt tttgttttgt gaccaaacc gatgggtccg  
2280  
attgggttta tttgttttta agttcctaga actcatgggt ggtgggtccc aatcagattc  
2340  
60

10014101.121001

tcctagacca aaccgatctc aacgaaccct ccgcacatca ttgattatta cattaatata  
2400  
gatattgtcg ttgctgacgt gtcgtaattt gatgttattg tcagatggga cgagaggagc  
2460  
5 tcagccgtga cgccggatga ggaagttttc tatctggtgg ctctattgag atcagcttta  
2520  
acggacgggtg aagagacaca gaagctagag tatctgaaag atcagaaccg tcggatcttg  
2580  
gagttctgtg aacaagccaa gatcaatgtg aagcagtatc ttcctcacca cgcaacacag  
10 2640  
gaagagtggg tggctcattt tggggacaag tgggatcggt tcagaagctt aaaggctgag  
2700  
tttgatccgc gacacatact cgctactggt cagagaatct ttcaaaaccc atctttgtct  
2760  
15 ttgtttcctc cgtcgtcgtc ttcttcgtca gcggcttcat ggtga  
2805

<210> 10  
20 <211> 536  
<212> PRT  
<213> Arabidopsis thaliana

<400> 10  
25 Met Thr Ser Ser Phe Leu Leu Leu Thr Phe Ala Ile Cys Lys Leu Ile  
1 5 10 15  
Ile Ala Val Gly Leu Asn Val Gly Pro Ser Glu Leu Leu Arg Ile Gly  
20 25 30  
30 Ala Ile Asp Val Asp Gly His Phe Thr Val His Pro Ser Asp Leu Ala  
35 40 45  
Ser Val Ser Ser Asp Phe Gly Met Leu Lys Ser Pro Glu Glu Pro Leu  
35 50 55 60  
Ala Val Leu His Pro Ser Ser Ala Glu Asp Val Ala Arg Leu Val Arg  
65 70 75 80  
40 Thr Ala Tyr Gly Ser Ala Thr Ala Phe Pro Val Ser Ala Arg Gly His  
85 90 95  
Gly His Ser Ile Asn Gly Gln Ala Ala Ala Gly Arg Asn Gly Val Val  
100 105 110  
45 Val Glu Met Asn His Gly Val Thr Gly Thr Pro Lys Pro Leu Val Arg  
115 120 125  
Pro Asp Glu Met Tyr Val Asp Val Trp Gly Gly Glu Leu Trp Val Asp  
50 130 135 140  
Val Leu Lys Lys Thr Leu Glu His Gly Leu Ala Pro Lys Ser Trp Thr  
145 150 155 160  
55 Asp Tyr Leu Tyr Leu Thr Val Gly Gly Thr Leu Ser Asn Ala Gly Ile  
165 170 175  
Ser Gly Gln Ala Phe His His Gly Pro Gln Ile Ser Asn Val Leu Glu  
180 185 190  
60

10014101.121001

	Leu	Asp	Val	Val	Thr	Gly	Lys	Gly	Glu	Val	Met	Arg	Cys	Ser	Glu	Glu
			195					200					205			
5	Glu	Asn	Thr	Arg	Leu	Phe	His	Gly	Val	Leu	Gly	Gly	Leu	Gly	Gln	Phe
		210					215					220				
	Gly	Ile	Ile	Thr	Arg	Ala	Arg	Ile	Ser	Leu	Glu	Pro	Ala	Pro	Gln	Arg
	225					230					235					240
10	Val	Arg	Trp	Ile	Arg	Val	Leu	Tyr	Ser	Ser	Phe	Lys	Val	Phe	Thr	Glu
					245					250					255	
	Asp	Gln	Glu	Tyr	Leu	Ile	Ser	Met	His	Gly	Gln	Leu	Lys	Phe	Asp	Tyr
				260					265					270		
15	Val	Glu	Gly	Phe	Val	Ile	Val	Asp	Glu	Gly	Leu	Val	Asn	Asn	Trp	Arg
			275					280					285			
	Ser	Ser	Phe	Phe	Ser	Pro	Arg	Asn	Pro	Val	Lys	Ile	Ser	Ser	Val	Ser
20			290				295					300				
	Ser	Asn	Gly	Ser	Val	Leu	Tyr	Cys	Leu	Glu	Ile	Thr	Lys	Asn	Tyr	His
	305					310					315					320
25	Asp	Ser	Asp	Ser	Glu	Ile	Val	Asp	Gln	Glu	Val	Glu	Ile	Leu	Met	Lys
					325					330					335	
	Lys	Leu	Asn	Phe	Ile	Pro	Thr	Ser	Val	Phe	Thr	Thr	Asp	Leu	Gln	Tyr
				340					345					350		
30	Val	Asp	Phe	Leu	Asp	Arg	Val	His	Lys	Ala	Glu	Leu	Lys	Leu	Arg	Ser
			355					360					365			
	Lys	Asn	Leu	Trp	Glu	Val	Pro	His	Pro	Trp	Leu	Asn	Leu	Phe	Val	Pro
35			370				375					380				
	Lys	Ser	Arg	Ile	Ser	Asp	Phe	Asp	Lys	Gly	Val	Phe	Lys	Gly	Ile	Leu
	385					390					395					400
40	Gly	Asn	Lys	Thr	Ser	Gly	Pro	Ile	Leu	Ile	Tyr	Pro	Met	Asn	Lys	Asp
					405					410					415	
	Lys	Trp	Asp	Glu	Arg	Ser	Ser	Ala	Val	Thr	Pro	Asp	Glu	Glu	Val	Phe
				420					425					430		
45	Tyr	Leu	Val	Ala	Leu	Leu	Arg	Ser	Ala	Leu	Thr	Asp	Gly	Glu	Glu	Thr
			435					440					445			
	Gln	Lys	Leu	Glu	Tyr	Leu	Lys	Asp	Gln	Asn	Arg	Arg	Ile	Leu	Glu	Phe
50			450				455					460				
	Cys	Glu	Gln	Ala	Lys	Ile	Asn	Val	Lys	Gln	Tyr	Leu	Pro	His	His	Ala
	465					470					475					480
55	Thr	Gln	Glu	Glu	Trp	Val	Ala	His	Phe	Gly	Asp	Lys	Trp	Asp	Arg	Phe
					485					490					495	
	Arg	Ser	Leu	Lys	Ala	Glu	Phe	Asp	Pro	Arg	His	Ile	Leu	Ala	Thr	Gly
				500					505					510		
60																

10014101.121001

Gln Arg Ile Phe Gln Asn Pro Ser Leu Ser Leu Phe Pro Pro Ser Ser  
515 520 525

5 Ser Ser Ser Ser Ala Ala Ser Trp  
530 535

10 <210> 11  
<211> 1936  
<212> DNA  
<213> Arabidopsis thaliana

15 <400> 11  
atgcttatag taagaagttt caccatcttg cttctcagct gcatagcctt taagttggct  
60  
tgctgcttct ctagcagcat ttcttctttg aaggcgcttc ccctagtagg ccatttggag  
120  
tttgaacatg tccatcacgc ctccaaagat tttggaaatc gataccagtt gatccctttg  
180  
20 gcggtcttac atcccaaatc ggtaagcgac atcgccctcaa cgatacgaca catctggatg  
240  
atgggcactc attcacagct tacagtggca gcgagaggtc gtggacattc actccaaggg  
300  
25 caagctcaaa caagacatgg aattgttata cacatggaat cactccatcc ccagaagctg  
360  
caggtctaca gtgtggattc ccctgctcca tatgttgatg tgtctgggtg tgagctgtgg  
420  
ataaacattt tgcagtagac cctcaagtac gggcttgac caaaatcatg gacggattac  
480  
30 ctgcatttaa ctgtaggtgg tactctgtcc aatgctggaa taagcggcca ggcattccga  
540  
catggaccac agatcagcaa tgttcatcaa ctggagattg tcacagggtta gttcagagtt  
600  
35 gcagtattcg tgttttgaaa gcatagactc tatatgggtg gtgactatta acaacatgaa  
660  
gagattcccg agaatagcta cccactaatg tcatgcctat ttattgactg caggaaaagg  
720  
cgagatccta aactgtacaa agaggcagaa cagcgactta tttaatggtg ttcttggtg  
780  
40 tttaggtcag tttggcatca taacgcgggc aagaatagca ttggaaccag caccaaccat  
840  
ggtaaacaat aaataaataa aaaacttaaa aactgaacac gcgtgtgtcc tcctaactct  
900  
45 gtataatgga caggtaaaat ggataagagt gttatacctg gattttgcag cttttgccaa  
960  
ggaccaagag caactaatat ctgcccaggg ccacaaattc gattacatag aagggtttgt  
1020  
gataataaac aggacaggcc tcctgaacag ctggagggtg tctttcaccg cagaagagcc  
1080  
50 tttagaagca agccaattca agtttgatgg aaggactctg tattgtctgg agctagccaa  
1140  
gtatttgaag caagataaca aagacgtaat caaccagggtg agaaaacaga gtagaagcaa  
1200  
55 tcggtagaat cttcttttgg agatgacatt cattggaact gaaaatatat atatatttgt  
1260  
ccaatccagg aagtgaagaa aacattatca gagctaagct acgtgacgtc gacactgttt  
1320  
acaacggagg tagcatatga agcattcttg gacaggggtac atgtgtctga ggtaaaactc  
1380  
60

10014101-121001

cgatcgaaag ggcagtggga ggtgccacat ccatggctga acctcctggt accaagaagc  
1440  
aaaatcaatg aatttgcaag aggtgtattht ggaaacatac taacggatac aagcaacggc  
1500  
5 ccagtcacgc tctacccagt gaacaaatca aagtaagaaa gaaagaaaga aagagctagt  
1560  
catgattttg tttctttttca cttgttgaca aaacaaaagc atgttggtga gcaggtggga  
1620  
caatcaaaca tcagcagtaa caccggagga agaggtattc tacctgggtgg cgatcctaac  
1680  
10 atcggcatct ccagggtcgg caggaaagga tggagtagaa gagatcttga ggcggaacag  
1740  
aagaatactg gaattcagtg aagaagcagg gataggggttg aagcagtatc tgccacatta  
1800  
15 cagcacaaga gaagagtggga gatcccattht cgggggacaag tgggggagaat ttgtgaggag  
1860  
gaaatccaga tatgatccat tggcaattct tgcgcctggc caccgaattt ttcaaaaggc  
1920  
agtctcatac tcatga  
20 1936

<210> 12  
<211> 504  
25 <212> PRT  
<213> Arabidopsis thaliana

<400> 12  
30 Met Leu Ile Val Arg Ser Phe Thr Ile Leu Leu Leu Ser Cys Ile Ala  
1 5 10 15  
Phe Lys Leu Ala Cys Cys Phe Ser Ser Ser Ile Ser Ser Leu Lys Ala  
20 25 30  
35 Leu Pro Leu Val Gly His Leu Glu Phe Glu His Val His His Ala Ser  
35 40 45  
Lys Asp Phe Gly Asn Arg Tyr Gln Leu Ile Pro Leu Ala Val Leu His  
50 55 60  
40 Pro Lys Ser Val Ser Asp Ile Ala Ser Thr Ile Arg His Ile Trp Met  
65 70 75 80  
Met Gly Thr His Ser Gln Leu Thr Val Ala Ala Arg Gly Arg Gly His  
45 85 90 95  
Ser Leu Gln Gly Gln Ala Gln Thr Arg His Gly Ile Val Ile His Met  
100 105 110  
50 Glu Ser Leu His Pro Gln Lys Leu Gln Val Tyr Ser Val Asp Ser Pro  
115 120 125  
Ala Pro Tyr Val Asp Val Ser Gly Gly Glu Leu Trp Ile Asn Ile Leu  
130 135 140  
55 His Glu Thr Leu Lys Tyr Gly Leu Ala Pro Lys Ser Trp Thr Asp Tyr  
145 150 155 160  
Leu His Leu Thr Val Gly Gly Thr Leu Ser Asn Ala Gly Ile Ser Gly  
60 165 170 175

10044101-10044101



	Gln	Ala	Phe	Arg	His	Gly	Pro	Gln	Ile	Ser	Asn	Val	His	Gln	Leu	Glu
				180					185					190		
5	Ile	Val	Thr	Gly	Lys	Gly	Glu	Ile	Leu	Asn	Cys	Thr	Lys	Arg	Gln	Asn
			195					200					205			
	Ser	Asp	Leu	Phe	Asn	Gly	Val	Leu	Gly	Gly	Leu	Gly	Gln	Phe	Gly	Ile
		210					215					220				
10	Ile	Thr	Arg	Ala	Arg	Ile	Ala	Leu	Glu	Pro	Ala	Pro	Thr	Met	Asp	Gln
	225					230					235					240
	Glu	Gln	Leu	Ile	Ser	Ala	Gln	Gly	His	Lys	Phe	Asp	Tyr	Ile	Glu	Gly
15					245					250					255	
	Phe	Val	Ile	Ile	Asn	Arg	Thr	Gly	Leu	Leu	Asn	Ser	Trp	Arg	Leu	Ser
				260					265					270		
20	Phe	Thr	Ala	Glu	Glu	Pro	Leu	Glu	Ala	Ser	Gln	Phe	Lys	Phe	Asp	Gly
			275					280					285			
	Arg	Thr	Leu	Tyr	Cys	Leu	Glu	Leu	Ala	Lys	Tyr	Leu	Lys	Gln	Asp	Asn
		290					295					300				
25	Lys	Asp	Val	Ile	Asn	Gln	Glu	Val	Lys	Glu	Thr	Leu	Ser	Glu	Leu	Ser
	305					310					315					320
	Tyr	Val	Thr	Ser	Thr	Leu	Phe	Thr	Thr	Glu	Val	Ala	Tyr	Glu	Ala	Phe
30					325					330					335	
	Leu	Asp	Arg	Val	His	Val	Ser	Glu	Val	Lys	Leu	Arg	Ser	Lys	Gly	Gln
				340					345					350		
35	Trp	Glu	Val	Pro	His	Pro	Trp	Leu	Asn	Leu	Leu	Val	Pro	Arg	Ser	Lys
			355					360					365			
	Ile	Asn	Glu	Phe	Ala	Arg	Gly	Val	Phe	Gly	Asn	Ile	Leu	Thr	Asp	Thr
		370					375					380				
40	Ser	Asn	Gly	Pro	Val	Ile	Val	Tyr	Pro	Val	Asn	Lys	Ser	Lys	Trp	Asp
	385					390					395					400
	Asn	Gln	Thr	Ser	Ala	Val	Thr	Pro	Glu	Glu	Glu	Val	Phe	Tyr	Leu	Val
45					405					410					415	
	Ala	Ile	Leu	Thr	Ser	Ala	Ser	Pro	Gly	Ser	Ala	Gly	Lys	Asp	Gly	Val
				420					425					430		
50	Glu	Glu	Ile	Leu	Arg	Arg	Asn	Arg	Arg	Ile	Leu	Glu	Phe	Ser	Glu	Glu
			435				440						445			
	Ala	Gly	Ile	Gly	Leu	Lys	Gln	Tyr	Leu	Pro	His	Tyr	Thr	Thr	Arg	Glu
		450					455					460				
55	Glu	Trp	Arg	Ser	His	Phe	Gly	Asp	Lys	Trp	Gly	Glu	Phe	Val	Arg	Arg
	465					470					475					480
	Lys	Ser	Arg	Tyr	Asp	Pro	Leu	Ala	Ile	Leu	Ala	Pro	Gly	His	Arg	Ile
60					485					490					495	

10014101-121001

Phe Gln Lys Ala Val Ser Tyr Ser  
500

5

<210> 13

<211> 31

<212> DNA

10 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide  
: primer or probe

15

<400> 13

cggtcgacat gggattgacc tcatccttac g  
31

20

<210> 14

<211> 35

<212> DNA

<213> Artificial Sequence

25

<220>

<223> Description of Artificial Sequence:oligonucleotide  
: primer or probe

30

<400> 14

gcgtcgactt atacagttct aggtttcggc agtat  
35

35

<210> 15

<211> 33

<212> DNA

<213> Artificial Sequence

40

<220>

<223> Description of Artificial Sequence:oligonucleotide  
: primer or probe

45

<400> 15

gcggtaccag agagagaaac ataaacaaat ggc  
33

50

<210> 16

<211> 31

<212> DNA

<213> Artificial Sequence

55

<220>

<223> Description of Artificial Sequence:oligonucleotide  
: primer or probe

60

<400> 16

gcggtaccga attttacttc caccaaaatg c  
31

10014101.121001

5 <210> 17  
<211> 34  
<212> DNA  
<213> Artificial Sequence

10 <220>  
<223> Description of Artificial Sequence:oligonucleotide  
: primer or probe

15 <400> 17  
gcggtacctt cattgataag aatcaagcta ttca  
34

20 <210> 18  
<211> 31  
<212> DNA  
<213> Artificial Sequence

25 <220>  
<223> Description of Artificial Sequence:oligonucleotide  
: primer or probe

30 <400> 18  
gcggtaccga aagtggtag aacgactaac a  
31

35 <210> 19  
<211> 28  
<212> DNA  
<213> Artificial Sequence

40 <220>  
<223> Description of Artificial Sequence:oligonucleotide  
: primer or probe

45 <400> 19  
gcggtacccc cattaaccta cccgtttg  
28

50 <210> 20  
<211> 32  
<212> DNA  
<213> Artificial Sequence

55 <220>  
<223> Description of Artificial Sequence:oligonucleotide  
: primer or probe

60 <400> 20  
gcggtaccag acgatgaacg tacttgtctg ta  
32

60 <210> 21  
<211> 28

10014301-121001

<212> DNA  
<213> Artificial Sequence

5 <220>  
<223> Description of Artificial Sequence:oligonucleotide  
: primer or probe

<400> 21  
ggggtacctt gatgaatcgt gaaatgac  
10 28

<210> 22  
<211> 31  
15 <212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:oligonucleotide  
20 : primer or probe

<400> 22  
ggggtaccct ttcctcttgg tttgtcctg t  
25 31

<210> 23  
<211> 32  
30 <212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:oligonucleotide  
35 : primer or probe

<400> 23  
gctctagatc aggaaaagaa ccatgcttat ag  
40 32

<210> 24  
<211> 32  
45 <212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:oligonucleotide  
: primer or probe

50 <400> 24  
gctctagatc atgagtatga gactgccttt tg  
32

55 <210> 25  
<211> 1728  
<212> DNA  
<213> Arabidopsis thaliana

60 <400> 25

1001401-1001

10014101.121001

atgggattga cctcatcctt acggttccat agacaaaaca acaagacttt cctcggaatc  
60  
ttcatgatct tagttctaag ctgtatacca ggtagaacca atctttgttc caatcattct  
120  
5 gttagtacc caaaagaatt accttcttca aatccttcag atattcggtc ctcattagtt  
180  
tcactagatt tggaggggta tataagcttc gacgatgtcc acaatgtggc caaggacttt  
240  
ggcaacagat accagttacc acctttggca attctacatc caaggtcagt ttttgatatt  
10 300  
tcacgatga tgaagcatat agtacatctg ggctccacct caaatcttac agtagcagct  
360  
agaggccatg gtcactcgct tcaaggacaa gctctagctc atcaagggtg tgtcatcaaa  
420  
15 atggagtcac ttcgaagtcc tgatatcagg atttataagg ggaagcaacc atatgttgat  
480  
gtctcaggtg gtgaaatatg gataaacatt ctacgcgaga ctctaaaata cggtctttca  
540  
ccaaagtcct ggacagacta ccttcatttg accgttggag gtacactatc taatgctgga  
20 600  
atcagcggtc aagcattcaa gcatggacc caaatcaaca acgtctacca gctagagatt  
660  
gttacaggga aaggagaagt cgtaacctgt tctgagaagc ggaattctga acttttcttc  
720  
25 agtgttcttg gcgggcttgg acagtttggc ataatcacc gccacggat ctctcttgaa  
780  
ccagcaccgc atatggttaa atggatcagg gtactctact ctgacttttc tgcattttca  
840  
agggaccaag aatatctgat ttcgaaggag aaaacttttg attacgttga aggatttggtg  
30 900  
ataatcaata gaacagacct tctcaataat tggcgatcgt cattcagtc caacgattcc  
960  
acacaggcaa gcagattcaa gtcagatggg aaaactcttt attgcctaga agtgggtcaaa  
1020  
35 tatttcaacc cagaagaagc tagctctatg gatcaggaaa ctggcaagtt actttcagag  
1080  
ttaaattata tccatccac tttgttttca tctgaagtgc catatatcga gtttctggat  
1140  
cgctgcata tcgcagagag aaaactaaga gcaaagggtt tatgggaggt tccacatccc  
40 1200  
tggctgaatc tcttgattcc taagagcagc atataccaat ttgctacaga agttttcaac  
1260  
aacatttctca caagcaacaa caacggctct atccttattt atccagtcaa tcaatccaag  
1320  
45 tggaagaaac atacatcttt gataactcca aatgaagata tattctatct cgtagccttt  
1380  
ctccctctg cagtgcacaa ttcctcaggg aaaaacgatc tagagtacct tttgaaacaa  
1440  
aaccaaagag ttatgaactt ctgcgcagca gcaaactca acgtgaagca gtatttgccc  
1500  
50 cattatgaaa ctcaaaaaga gtggaaatca cactttggca aaagatggga aacatttgca  
1560  
cagaggaaac aagcctacga ccctctagcg attctagcac ctggccaaag aatattccaa  
1620  
55 aagacaacag gaaaattatc tcccatccaa ctgcgaaagt caaaggcaac aggaagtcct  
1680  
caaaggtaac attacgcac aatactgccg aaacctagaa ctgtataa  
1728  
60

<210> 26  
<211> 1506  
<212> DNA  
<213> Arabidopsis thaliana

5  
    <400> 26  
    atggctaatac ttcgtttaat gatcacttta atcacggttt taatgatcac caaatcatca  
    60  
    aacgggtatta aaattgattt acctaaatcc cttaacctca ccctctctac cgatccttcc  
10 120  
    atcatctccg cagcctctca tgacttcgga aacataacca ccgtgacccc cggcggcgta  
    180  
    atctgcccct cctccaccgc tgatatctct cgtctcctcc aatacgccgc aaacggaaaa  
    240  
15 agtacattcc aagtagcggc tcgtggccaa ggccactcct taaacggcca agcctcggtc  
    300  
    tccggcggag taatcgtaaa catgacgtgt atcactgacg tgggtggttc aaaagacaag  
    360  
    aagtacgtg acgtggcggc cgggacgtta tgggtggatg tgcttaagaa gacggcggag  
20 420  
    aaaggggtgt cgccggtttc ttggacggat tatttgcata taaccgtcgg aggaacgttg  
    480  
    tcgaatggtg gaattggtgg tcaagtgttt cgaaacggtc ctcttgtag taacgtcctt  
    540  
25 gaattggacg ttattactgg gaaagggtgaa atgttgacat gctcgcgaca gctaaacca  
    600  
    gaattgttct atggagtgtt aggaggtttg ggtcaatttg gaattataac gagagccaga  
    660  
    attgttttgg accatgcacc taaacgggcc aaatggtttc ggatgctcta cagtgatttc  
30 720  
    acaactttta caaaggacca agaacgtttg atatcaatgg caaacgatat tggagtcgac  
    780  
    tatttagaag gtcaaataat tctatcaaac ggtgtcgttg acacctcttt tttcccacct  
    840  
35 tcagatcaat ctaaagtcgc tgatctagtc aagcaacacg gtatcatcta tgttcttgaa  
    900  
    gtagccaagt attatgatga tcccaatctc cccatcatca gcaaggttat tgacacatta  
    960  
    acgaaaacat taagttactt gcccggttc atatcaatgc acgacgtggc ctacttcgat  
40 1020  
    ttcttgaacc gtgtacatgt cgaagaaaat aaactcagat ctttgggatt atgggaactt  
    1080  
    cctcatcctt ggcttaacct ctacgttcct aaatctcgga ttctcgattt tcataacggc  
    1140  
45 gttgtcaaag acattcttct taagcaaaaa tcagcttcgg gactcgctct tctctatcca  
    1200  
    acaaaccgga ataatggga caatcgtatg tcggcgatga taccagagat cgatgaagat  
    1260  
    gttatatata ttatcggact actacaatcc gctaccccaa aggatcttcc agaagtggag  
50 1320  
    agcgttaacg agaagataat taggttttgc aaggattcag gtattaagat taagcaatat  
    1380  
    ctaattgcatt atactagtaa agaagattgg attgagcatt ttggatcaaa atgggatgat  
    1440  
55 ttttcgaaga ggaaagatct atttgatccc aagaaactgt tatctccagg gcaagacatc  
    1500  
    ttttga  
    1506

60

1001401.12001



<210> 27  
<211> 1572  
<212> DNA  
<213> Arabidopsis thaliana

5  
    <400> 27  
atggcgagtt ataatcttcg ttcacaagtt cgtcttatag caataacaat agtaatcatc  
60  
attactctct caactccgat cacaaccaac acatcaccac aaccatggaa tatectttca  
10 120  
cacaacgaat tcgccggaaa actcacctcc tctctctect ccgtcgaatc agccgccaca  
180  
gatttcggcc acgtcaccaa aatcttccct tccgccgtct taatcccttc ctccgttgaa  
240  
15 gacatcacag atctcataaa actctctttt gactctcaac tgtcttttcc tttagccgct  
300  
cgtggtcacg gacacagcca ccgtggccaa gcctcggcta aagacggagt tgtgggtcaac  
360  
atgcggtcca tggtaaaccg ggatcgaggt atcaagggtg ctaggacctg tttatatggt  
20 420  
gacgtggacg ctgcgtggct atggattgag gtggtgaata aaactttgga gttaggggta  
480  
acgccgggtt cttggacgga ttatttgtat ttaacagtcg gtgggacgtt atcaaacggc  
540  
25 ggaattagtg gacaaacgtt tcggtacggt ccacagatca ctaatgttct agagatggat  
600  
gttattactg gaaaaggaga gattgcaact tgttccaagg acatgaactc ggatcttttc  
660  
ttcgcggtgt taggaggttt gggtciaattc ggcattataa caagagccag aattaaactt  
30 720  
gaagtagctc cgaaaagggc caagtgggta aggtttctat acatagattt ctccgaattc  
780  
acaagagatc aagaacgagt gatatcgaaa acggacgggtg tagatttctt agaaggttcc  
840  
35 attatggtgg accatggccc accggataac tggagatcca cgtattatcc accgtccgat  
900  
cacttgagga tcgcctcaat ggtcaaacga catcgtgtca tctactgcct tgaagtcgtc  
960  
aagtattacg acgaaacttc tcaatacaca gtcaacgagg aaatggagga gttaagcgat  
40 1020  
agtttaaacc atgtaagagg gtttatgtac gagaaagatg tgacgtatat ggatttccta  
1080  
aaccgagttc gaaccggaga gctaaacctg aaatccaaag gccaatggga tgttccacat  
1140  
45 ccatggctta atctcttcgt accaaaaact caaatctcca aatttgatga tgggtgtttt  
1200  
aagggtatta tcctaagaaa taacatcact agcggtcctg ttcttggtta tcctatgaat  
1260  
cgcaacaagt ggaatgatcg gatgtctgcc gctatacccg aggaagatgt attttatgcg  
50 1320  
gtagggtttt taagatccgc gggttttgac aattgggagg cttttgatca agaaaacatg  
1380  
gaaatactga agttttgtga ggatgcta atgggggtta tacaatatct tccttatcat  
1440  
55 tcatcacaag aaggatgggt tagacatttt ggtccgaggt ggaatatttt cgtagagaga  
1500  
aaatataaat atgatcccaa aatgatatta tcaccgggac aaaatatatt tcaaaaaata  
1560  
aactcgagtt ag  
60 1572

10014101.1001

5 <210> 28  
 <211> 1575  
 <212> DNA  
 <213> Arabidopsis thaliana

10 <400> 28  
 atgactaata ctctctgttt aagcctcatc accctaataa cgctttttat aagtttaacc  
 60  
 ccaaccttaa tcaaatcaga tgagggcatt gatgttttct taccatatac actcaacctt  
 120  
 acggtcctaa ccgatccctt ctccatctct gccgcttctc acgacttcgg taacataacc  
 180  
 15 gacgaaaatc ccggcgccgt cctctgccct tcctccacca cggaggtggc tcgtctctc  
 240  
 cgtttcgcta acggaggatt ctcttacaat aaaggctcaa ccagccccgc gtctactttc  
 300  
 aaagtggctg ctcgaggcca aggccactcc ctccgtggcc aagcctctgc acccgagggt  
 360  
 20 gtcgtcgtga acatgacgtg tctcgccatg gcggctaaac cagcggcggg tggtatctcg  
 420  
 gcagacggga cttacgctga cgtggctgcc gggacgatgt ggggtggatgt tctgaaggcg  
 480  
 25 gcggtggata gaggcgtctc gccggttaca tggacggatt atttgtatct cagcgtcggc  
 540  
 gggacgttgt cgaacgctgg aatcggtggg cagacgttta gacacggccc tcagattagt  
 600  
 aacgttcatg agcttgacgt tattaccgga aaagggtgaaa tgatgacttg ctctccaaag  
 660  
 30 ttaaaccctg aattgttcta tggagtttta ggaggtttgg gtcaattcgg tattataacg  
 720  
 agggccagga ttgcgttgga tcatgcaccc acaagggtga aatgggtctcg catactctac  
 780  
 35 agtgacttct cggcttttaa aagagaccaa gagcgtttaa tatcaatgac caatgatctc  
 840  
 ggagttgact ttttgggaagg tcaacttatg atgtcaaatg gcttcgtaga cacctcttct  
 900  
 ttcccactct ccgatcaaac aagagtcgca tctcttgtga atgaccaccg gatcatctat  
 960  
 40 gttctcgaag tagccaagta ttatgacaga accacccttc ccattattga ccaggtgatt  
 1020  
 gacacgttaa gtagaactct aggtttcgtc ccagggttta tgttcgtaca agatgttccg  
 1080  
 45 tatttcgatt tcttgaaccg tgtccgaaac gaagaagata aactcagatc ttaggacta  
 1140  
 tgggaagttc ctcatccatg gcttaacatc tttgtcccgg ggtctcgaat ccaagatttt  
 1200  
 catgatgggtg ttattaatgg ccttcttcta aaccaaact caacttctgg tggtactctc  
 1260  
 50 ttctatccca caaaccgaaa caaatggaac aaccgcatgt caacgatgac accggacgaa  
 1320  
 gatgtttttt atgtgatcgg attactgcaa tcagctgggtg gatctcaaaa ttggcaagaa  
 1380  
 55 cttgaaaatc tcaacgacaa gggtattcag ttttgtgaaa actcgggaat taagattaag  
 1440  
 gaatatttga tgcactatac aagaaaagaa gattgggtta aacatttttg accaaaatgg  
 1500  
 gatgattttt taagaaagaa aattatgttt gatcccaaaa gactattgtc tccaggacaa  
 1560  
 60

10014101.121001

gacatattta attaa  
1575

5 <210> 29  
<211> 1611  
<212> DNA  
<213> Arabidopsis thaliana

10 <400> 29  
atgacgtcaa gctttcttct cctgacgttc gccatatgta aactgatcat agccgtgggt  
60  
ctaaacgtgg gccccagtga gctcctccgc atcggagcca tagatgtcga cggccacttc  
120  
15 accgtccacc cttccgactt agcctccgtc tcctcagact tcggtatgct gaagtcacct  
180  
gaagagccat tggccgtgct tcatccatca tcggccgaag acgtggcacg actcgtcaga  
240  
acagcttacg gttcagccac ggcgtttccg gtctcagccc gaggccacgg ccattccata  
20 300  
aacggacaag ccgcggcggg gaggaacggt gtggtggttg aaatgaacca cggcgtaacc  
360  
gggacgcca agccactcgt ccgaccggat gaaatgtatg tggatgtatg gggaggagag  
420  
25 ttatgggtcg atgtgttgaa gaaaacgttg gagcatggct tagcaccaaa atcatggacg  
480  
gattacttgt atctaaccgt tggaggtaca ctctccaatg caggaatcag tgggtcaagct  
540  
tttcaccatg gtcctcaa at tagtaacgtc cttgagctcg acgttgtaac tgggaaagga  
30 600  
gaggtgatga gatgctcaga agaagagaac acaaggctat tccatggagt tcttggtgga  
660  
ttaggtcaat ttgggatcat cactcgagca cgaatctctc tcgaaccagc tccccaagga  
720  
35 gtgagatgga tacgggtatt gtattcgagc ttcaaagtgt ttacggagga ccaagagtac  
780  
ttaatctcaa tgcattgtca attaaagttt gattacgtgg aaggttttgt gattgtggac  
840  
gaaggactcg tcaacaattg gagatcttct ttcttctctc cacgtaaccc cgtcaagatc  
40 900  
tcctctgtta gttccaacgg ctctgttttg tattgccttg agatcaccaa gaactaccac  
960  
gactccgact ccgaaatcgt tgatcaggaa gttgagattc tgatgaagaa attgaatttc  
1020  
45 ataccgacat cggctctttac aacggattta caatatgtgg actttctcga ccgggtacac  
1080  
aaggccgaat tgaagctccg gtccaagaat ttatgggagg ttccacaccc atgggtcaac  
1140  
ctcttcgtgc caaatcaag aatctctgac ttcgataaag gcgttttcaa gggcattttg  
50 1200  
ggaaataaaa caagtggccc tattcttata taccatga acaaagacaa atgggacgag  
1260  
aggagctcag ccgtgacgcc ggatgaggaa gttttctatc tgggtggctct attgagatca  
1320  
55 gctttaacgg acggtgaaga gacacagaag ctagagtatc tgaaagatca gaaccgtcgg  
1380  
atcttgaggt tctgtgaaca agccaagatc aatgtgaagc agtatcttcc tcaccacgca  
1440  
acacaggaag agtgggtggc tcattttggg gacaagtggg atcggttcag aagcttaaag  
60 1500

10014101 121001

gctgagtttg atccgcgaca catactcgct actggtcaga gaatctttca aaacccatct  
1560  
ttgtctttgt ttctctcgtc gtcgtcttct tcgtcagcgg cttcatgggtg a  
1611

5

<210> 30  
<211> 1515  
<212> DNA

10 <213> Arabidopsis thaliana

<400> 30  
atgcttatag taagaagttt caccatcttg cttctcagct gcatagcctt taagttggct  
60

15 tgctgcttct ctagcagcat ttcttctttg aaggcgcttc ccctagtagg ccatttggag  
120

tttgaacatg tccatcacgc ctccaaagat tttggaaatc gataccagtt gatccctttg  
180

20 gcggtcttac atcccaaadc ggtaagcgac atcgccctcaa cgatacgaca catctggatg  
240

atgggcactc attcacagct tacagtggca gcgagaggtc gtggacattc actccaaggc  
300

caagctcaaa caagacatgg aattggtata cacatggaat cactccatcc ccagaagctg  
360

25 caggtctaca gtgtggattc ccctgctcca tatgttgatg tgtctgggtg tgagctgtgg  
420

ataaacattt tgcattgagac cctcaagtac gggcttgac caaatcatg gacggattac  
480

30 ctgcatttaa ctgtagggtg tactctgtcc aatgctggaa taagcggcca ggcattccga  
540

catggaccac agatcagcaa tgttcatcaa ctggagattg tcacaggaaa aggcgagatc  
600

ctaaactgta caaagaggca gaacagcgac ttatttaatg gtgttcttgg tggtttaggt  
660

35 cagtttggca tcataacgcg ggcaagaata gcattggaac cagcaccaac catggacca  
720

gagcaactaa tatctgcccc gggccacaaa ttcgattaca tagaagggtt tgtgataata  
780

40 aacaggacag gcctcctgaa cagctggagg ttgtctttca ccgcagaaga gcctttagaa  
840

gcaagccaat tcaagtttga tggaaggact ctgtattgtc tggagctagc caagtatttg  
900

aagcaagata acaaagacgt aatcaaccag gaagtgaag aacattatc agagctaagc  
960

45 tacgtgacgt cgacactgtt tacaacggag gtagcatatg aagcattctt ggacagggtg  
1020

catgtgtctg aggtaaaact ccgatcgaaa gggcagtggt aggtgccaca tccatggctg  
1080

50 aacctcctgg taccaagaag caaatcaat gaatttgcaa gaggtgtatt tggaaacata  
1140

ctaacggata caagcaacgg ccagtcacg gtctaccag tgaacaaatc aaagtgggac  
1200

aatcaaacat cagcagtaac accggaggaa gaggtattct acctggtggc gatcctaaca  
1260

55 tcggcatctc cagggtcggc aggaaaggat ggagtagaag agatcttgag gcggaacaga  
1320

agaatactgg aattcagtga agaagcaggg atagggttga agcagtatct gccacattac  
1380

60 acgacaagag aagagtggag atcccatttc ggggacaagt ggggagaatt tgtgaggagg  
1440

1001-1001

aaatccagat atgatccatt ggcaattctt ggcctggcc accgaatttt tcaaaaggca  
1500  
gtctcatact catga  
1515

5

<210> 31  
<211> 84  
<212> DNA  
10 <213> Arabidopsis thaliana

<400> 31  
tcagcttcgg gactcgctct tctctatcca acaaaccgga ataatggga caatcgatg  
60  
15 tcggcgatga taccagagat cgat  
84

20

<210> 32  
<211> 28  
<212> PRT  
<213> Arabidopsis thaliana

25

<400> 32  
Ser Ala Ser Gly Leu Ala Leu Leu Tyr Pro Thr Asn Arg Asn Lys Trp  
1 5 10 15  
Asp Asn Arg Met Ser Ala Met Ile Pro Glu Ile Asp  
20 25

30

<210> 33  
<211> 2814  
35 <212> DNA  
<213> Arabidopsis thaliana

<400> 33  
atgaatcgta tgacgtcaag ctttcttctc ctgacgttcg ccatatgtaa actgatcata  
40 60  
gccgtgggtc taaacgtggg cccagtgag ctctccgca tcggagccat agatgtcgac  
120  
ggccacttca ccgtccacc ttccgactta gcctccgtct cctcagactt cggtatgctg  
180  
45 aagtcacctg aagagccatt ggccgtgctt catccatcat cggccgaaga cgtggcacga  
240  
ctcgtcagaa cagcttacgg ttcagccacg gcgtttccgg tctcagcccg aggccacggc  
300  
cattccataa acggacaagc cgcggcgggg aggaacggtg tggtggttga aatgaaccac  
50 360  
ggcgtaaccg ggacgcccac gccactcgtc cgaccggatg aaatgtatgt ggatgtatgg  
420  
ggtggagagt tatgggtcga tgtgttgaag aaaacgttgg agcatggctt agcaccaaaa  
480  
55 tcatggacgg attacttgta tctaaccgtt ggaggtacac tctccaatgc aggaatcagt  
540  
ggtcaagctt ttcacatgg tctcaaatt agtaacgtcc ttgagctcga cgttgtaact  
600  
ggtagtatt aaaacattca agttcatata ttttaaagtc ttttgtctga agttttacta  
60 660

1004404.4004



ataacaagaa attgatacca aaaagtaggg aaaggagagg tgatgagatg ctcagaagaa  
720  
gagaacacaa ggctattcca tggagttctt ggtggattag gtcaatttgg gatcatcact  
780  
5 cgagcacgaa tctctctcga accagctccc caaagggtaa tattttttta atgactagct  
840  
atcaaaaatc cctggcgggt ccatacgttg taatcttttt agtttttact gttgatggta  
900  
ttttttatat attttggata ataaaaccct aaaatggat attgtgatga caggtgagat  
10 960  
ggatacgggt attgtattcg agcttcaaag tgtttacgga ggaccaagag tacttaatct  
1020  
caatgcatgg tcaattaaag tttgattacg tggaagggtt tgtgattgtg gacgaaggac  
1080  
15 tcgtcaacaa ttggagatct tctttcttct ctccacgtaa ccccgtaag atctcctctg  
1140  
ttagttccaa cggctctgtt ttgtattgcc ttgagatcac caagaactac cactactccg  
1200  
actccgaaat cgttgatcag gtcactttca ttattcactt agaaaaaagc gatattttca  
1260  
20 ttttttatat tgatgaatat ctggaaggat ttaacgctat gcgactattg ggaaatcatt  
1320  
atgaaaaaat atttagttta tatgattgaa agtgggtctcc atagtatttt tgttgtgtcg  
1380  
25 actttattat aacttaaatt tggaagagga catgaagaag aagccagaga ggatctacag  
1440  
agatctagct tttccacctg aacttaataa tgcacattta tataattatt tttcttcttc  
1500  
taaagtttag tttatcacta gcgaattaat catggttact aattaagtag tggacagggt  
1560  
30 catggaccac tcactacca aataatgatt cctctttact cttagttta attttaataa  
1620  
aaccaactct actggaatct taacttatcc ttggtttttg taggctttta tagcaacacg  
1680  
35 gtttttttaa ttttcctatt ccagattttg tatattaaat gtcgattttt tttctttttg  
1740  
tttcaggaag ttgagattct gatgaagaaa ttgaatttca taccgacatc ggtctttaca  
1800  
acggatttac aatatgtgga ctttctcgac cgggtacaca aggccgaatt gaagctccgg  
1860  
40 tccaagaatt tatgggaggt tccacacca tggctcaacc tcttcgtgcc aaaatcaaga  
1920  
atctctgact tcgataaagg cgttttcaag ggcatttttg gaaataaaac aagtggccct  
1980  
45 attcttatct accccatgaa caaagacaag taagtcttga cattaccatt gattactact  
2040  
tctaaatttc ttctctagaa aaaagaataa aacgagtttt gcattgcatg catgcaaagt  
2100  
tacacttggtg gggattaatt agtgggtccaa gaaaaaaagt ttgtcaaat tgaaaaaac  
2160  
50 tagacacgtg gtacatggga ttgtccgaaa aacgttgtcc acatgtgcat cgaaccagct  
2220  
aagattgaca acaacacttc gtcggctcgt atttctcttt ttgttttggt accaaatccg  
2280  
55 atgggtccaga ttgggtttat ttgtttttaa gttcctagaa ctcatgggtg gtgggtccca  
2340  
atcagattct cctagaccaa accgatctca acgaaccctc cgcacatcat tgattattac  
2400  
attaatatag atattgtcgt tgctgacgtg tcgtaatttg atgttattgt cagatgggac  
2460  
60

10014101.161001



gagaggagct cagccgtgac gccggatgag gaagttttct atctggtggc tctattgaga  
2520  
tcagctttaa cggacggtga agagacacag aagctagagt atctgaaaga tcagaaccgt  
2580  
5 cggatcttgg agttctgtga acaagccaag atcaatgtga agcagtatct tctcaccac  
2640  
gcaacacagg aagagtgggt ggctcatttt ggggacaagt gggatcgggt cagaagctta  
2700  
aaggctgagt ttgatccgcg acacatactc gctactggtc agagaatctt tcaaaaccca  
10 2760  
tctttgtctt tgtttctctc gtcgtcgtct tcttcgtcag cggcttcatg gtga  
2814

15 <210> 34  
<211> 1620  
<212> DNA  
<213> Arabidopsis thaliana

20 <400> 34  
atgaatcgta tgacgtcaag ctttcttctc ctgacgttcg ccatatgtaa actgatcata  
60  
gccgtgggtc taaacgtggg cccagtgag ctctccgca tcggagccat agatgtcgac  
120  
25 ggccacttca ccgtccaccc ttccgactta gcctccgtct cctcagactt cggtatgctg  
180  
aagtcacctg aagagccatt ggccgtgctt catccatcat cggccgaaga cgtggcacga  
240  
ctcgtcagaa cagcttacgg ttcagccacg gcgtttccgg tctcagcccg aggccacggc  
30 300  
cattccataa acggacaagc cgcggcgggg aggaacgggtg tgggtggttga aatgaaccac  
360  
ggcgttaaccg ggacgcccac gccactcgtc cgaccggatg aatgtatgt ggatgtatgg  
420  
35 ggtggagagt tatgggtcga tgtgttgaag aaaacggttg agcatggctt agcaccaaaa  
480  
tcatggacgg attacttgta tctaaccgtt ggaggtacac tctccaatgc aggaatcagt  
540  
ggtcaagctt ttcaccatgg tcttcaaatt agtaacgtcc ttgagctcga cgttgtaact  
40 600  
gggaaaggag aggtgatgag atgctcagaa gaagagaaca caaggctatt ccatggagtt  
660  
cttgggtggat taggtcaatt tgggatcatc actcgagcac gaatctctct cgaaccagct  
720  
45 ccccaaaggg tgagatggat acgggtattg tattcgagct tcaaagtgtt tacggaggac  
780  
caagagtact taatctcaat gcatggtcaa ttaaagtttg attacgtgga aggttttgtg  
840  
attgtggacg aaggactcgt caacaattgg agatcttctt tcttctctcc acgtaacccc  
50 900  
gtcaagatct cctctgttag ttccaacggc tctgttttgt attgccttga gatcaccaag  
960  
aactaccacg actccgactc cgaaatcgtt gatcaggaag ttgagattct gatgaagaaa  
1020  
55 ttgaatttca taccgacatc ggtctttaca acggatttac aatatgtgga ctttctcgac  
1080  
cgggtacaca aggccgaatt gaagctccgg tccaagaatt tatgggaggt tccacaccca  
1140  
tggtcaacc tcttcgtgcc aaaatcaaga atctctgact tcgataaagg cgttttcaag  
60 1200

1001401.2101

ggcatttttg gaaataaaac aagtggccct attcttatct accccatgaa caaagacaaa  
1260  
tgggacgaga ggagctcagc cgtgacgccg gatgaggaag ttttctatct ggtggctcta  
1320  
5 ttgagatcag ctttaacgga cggatgaagag acacagaagc tagagtatct gaaagatcag  
1380  
aaccgtcggg tcttggagtt ctgtgaacaa gccaatgaca atgtgaagca gtatcttcct  
1440  
caccacgcaa cacaggaaga gtgggtggct ctttttgggg acaagtggga tcgggttcaga  
10 1500  
agcttaaagg ctgagtttga tccgcgacac atactcgcta ctggtcagag aatctttcaa  
1560  
aaccatctt tgtctttgtt tcctccgctg tcgtcttctt cgtcagcggc ttcattggtga  
1620  
15  
  
<210> 35  
<211> 539  
<212> PRT  
20 <213> Arabidopsis thaliana  
  
<400> 35  
Met Asn Arg Met Thr Ser Ser Phe Leu Leu Leu Thr Phe Ala Ile Cys  
1 5 10 15  
25 Lys Leu Ile Ile Ala Val Gly Leu Asn Val Gly Pro Ser Glu Leu Leu  
20 25 30  
30 Arg Ile Gly Ala Ile Asp Val Asp Gly His Phe Thr Val His Pro Ser  
35 40 45  
Asp Leu Ala Ser Val Ser Ser Asp Phe Gly Met Leu Lys Ser Pro Glu  
50 55 60  
35 Glu Pro Leu Ala Val Leu His Pro Ser Ser Ala Glu Asp Val Ala Arg  
65 70 75 80  
Leu Val Arg Thr Ala Tyr Gly Ser Ala Thr Ala Phe Pro Val Ser Ala  
85 90 95  
40 Arg Gly His Gly His Ser Ile Asn Gly Gln Ala Ala Ala Gly Arg Asn  
100 105 110  
45 Gly Val Val Val Glu Met Asn His Gly Val Thr Gly Thr Pro Lys Pro  
115 120 125  
Leu Val Arg Pro Asp Glu Met Tyr Val Asp Val Trp Gly Gly Glu Leu  
130 135 140  
50 Trp Val Asp Val Leu Lys Lys Thr Leu Glu His Gly Leu Ala Pro Lys  
145 150 155 160  
Ser Trp Thr Asp Tyr Leu Tyr Leu Thr Val Gly Gly Thr Leu Ser Asn  
165 170 175  
55 Ala Gly Ile Ser Gly Gln Ala Phe His His Gly Pro Gln Ile Ser Asn  
180 185 190  
60 Val Leu Glu Leu Asp Val Val Thr Gly Lys Gly Glu Val Met Arg Cys  
195 200 205

1001101.121001

	Ser	Glu	Glu	Glu	Asn	Thr	Arg	Leu	Phe	His	Gly	Val	Leu	Gly	Gly	Leu	
	210						215					220					
5	Gly	Gln	Phe	Gly	Ile	Ile	Thr	Arg	Ala	Arg	Ile	Ser	Leu	Glu	Pro	Ala	
	225					230					235					240	
	Pro	Gln	Arg	Val	Arg	Trp	Ile	Arg	Val	Leu	Tyr	Ser	Ser	Phe	Lys	Val	
					245					250					255		
10	Phe	Thr	Glu	Asp	Gln	Glu	Tyr	Leu	Ile	Ser	Met	His	Gly	Gln	Leu	Lys	
				260					265					270			
	Phe	Asp	Tyr	Val	Glu	Gly	Phe	Val	Ile	Val	Asp	Glu	Gly	Leu	Val	Asn	
15			275					280					285				
	Asn	Trp	Arg	Ser	Ser	Phe	Phe	Ser	Pro	Arg	Asn	Pro	Val	Lys	Ile	Ser	
		290					295					300					
20	Ser	Val	Ser	Ser	Asn	Gly	Ser	Val	Leu	Tyr	Cys	Leu	Glu	Ile	Thr	Lys	
	305					310					315					320	
	Asn	Tyr	His	Asp	Ser	Asp	Ser	Glu	Ile	Val	Asp	Gln	Glu	Val	Glu	Ile	
					325					330					335		
25	Leu	Met	Lys	Lys	Leu	Asn	Phe	Ile	Pro	Thr	Ser	Val	Phe	Thr	Thr	Asp	
				340					345					350			
	Leu	Gln	Tyr	Val	Asp	Phe	Leu	Asp	Arg	Val	His	Lys	Ala	Glu	Leu	Lys	
30			355					360					365				
	Leu	Arg	Ser	Lys	Asn	Leu	Trp	Glu	Val	Pro	His	Pro	Trp	Leu	Asn	Leu	
		370					375					380					
35	Phe	Val	Pro	Lys	Ser	Arg	Ile	Ser	Asp	Phe	Asp	Lys	Gly	Val	Phe	Lys	
	385					390					395					400	
	Gly	Ile	Leu	Gly	Asn	Lys	Thr	Ser	Gly	Pro	Ile	Leu	Ile	Tyr	Pro	Met	
					405					410					415		
40	Asn	Lys	Asp	Lys	Trp	Asp	Glu	Arg	Ser	Ser	Ala	Val	Thr	Pro	Asp	Glu	
				420					425					430			
	Glu	Val	Phe	Tyr	Leu	Val	Ala	Leu	Leu	Arg	Ser	Ala	Leu	Thr	Asp	Gly	
45			435					440					445				
	Glu	Glu	Thr	Gln	Lys	Leu	Glu	Tyr	Leu	Lys	Asp	Gln	Asn	Arg	Arg	Ile	
		450					455					460					
50	Leu	Glu	Phe	Cys	Glu	Gln	Ala	Lys	Ile	Asn	Val	Lys	Gln	Tyr	Leu	Pro	
	465					470					475					480	
	His	His	Ala	Thr	Gln	Glu	Glu	Trp	Val	Ala	His	Phe	Gly	Asp	Lys	Trp	
					485					490					495		
55	Asp	Arg	Phe	Arg	Ser	Leu	Lys	Ala	Glu	Phe	Asp	Pro	Arg	His	Ile	Leu	
				500					505					510			
	Ala	Thr	Gly	Gln	Arg	Ile	Phe	Gln	Asn	Pro	Ser	Leu	Ser	Leu	Phe	Pro	
60			515					520					525				

100144101-1001

Pro Ser Ser Ser Ser Ser Ser Ala Ala Ser Trp  
530 535

5

<210> 36  
<211> 842  
<212> DNA

10 <213> Arabidopsis thaliana

<400> 36

aagcttaaata gacaatttag taccttgggt tggatcatgat ttagagcggg acaaatatac  
60  
15 catacatcaa acgaggatat acagagaaaa ttcattggaag tatggaattt agaggacaat  
120  
ttctcttctg ggctacaacg gaccggccca ttctgctcatt taccagagg tatcgagttt  
180  
gtggactttt gatgccgcta gagactattg gcatcggatt gaaaaaatg ttacttcgt  
20 240  
tgtaacaat tttctgaatg caatatattt cttgcatga atatttaaac ttgttattac  
300  
tttcttttag cttagggtgtg gacaattatg gagtttactt caaacgagga agaattctaa  
360  
25 acgctcgggt caggtctcga aaacaaacca actcacaatc ctgacttaat tgaggaaaac  
420  
aatgcaaac cacatgcatg cttccatatt tctatcataa tcttataaga aaaaacacta  
480  
ctaagtgaat tgattctgta tatatataac caatgccttt tgttttgtga tattttatgt  
30 540  
atatataact attgactttt gtcatttatg gatagtgtct cgggctcttg gcaaacatat  
600  
ttcaaagaaa agttaatgac tgtaattaat taatctgaag ctagaacag aaccccgagg  
660  
35 taaaagaaaa agacagagca catgaagttt agtactttta tatatttaac atatcattct  
720  
ttcttattgc ttatctctaa agcaaaaact tccctaaacc ctaagccaaa ggactcagat  
780  
cgatgcagaa ccaagaaggc ttgttttgga ttgagagcc aatgcaaag aaaaaaactc  
40 840  
tt  
842

10034301 191001